Eastern Regional Meeting on Regeneration of Associate Species in Sal Forests for Augmentation of Ecosystem Services, Climate Change Resilience and Wildlife Management

(20-21 September 2019: Ranchi)

Background

Sal (*Shorea robusta*) forest is the most major forest type extending over half of the forest cover in states of eastern India. A plethora of factors including local cultural practices has led to gradual reduction in occurrence of Sal associate species in such forests with a result that in vast number of places, Sal forests are now constituted of a single species – Sal. Most of such Sal forest is of coppice origin that, besides extraction by the forest departments, has also been subjected to heavy anthropogenic pressure including cyclic clear felling at very short intervals in a highly unscientific manner by local communities in the past. With people's movement in the 1990s supported by joint forest management policies of the eastern Indian states, much of such degraded forests got selective protection by the local communities in which people protected Sal and other locally important species (such as Mahua) while continuing to meet their daily and seasonal requirements of firewood, fencing, house-building, etc. with *Oukath* (non-Sal species) or *jhari-jhunti* (shrubs, small trees species), etc. Sal being a strong coppicer, and Sal rooted-waste being prevalent in many parts of eastern India, Sal coppice shoots immediately sprung and **soon large forest areas in eastern India got covered with almost pure Sal species.**

Most of these forests were people-protected with the help of the local Forest Department, while the much-needed **subsidiary silvicultural operations (SSO)** could not been carried out to the required scale. Resultantly, the growing Sal coppice shoots did not always come from healthy stools or root stock, nor scientific singling could take place in subsequent years which affected the growing stock in a significant manner. In majority of such standing pure Sal crop, signs of **reduced vigour and disease susceptibility** are already discernable. A general lack of SSO also meant that other slow growing, delicate or **seed origin species** did not get the required support, and generally gave way to Sal's dominance.

Climate Change has added another dimension of threat. As rainfall variation from the normal has become more pronounced, and so has the temperature variation, natural regeneration and growth cycle, especially of seed origin species, also tends to get impacted. As an illustration of such impact, species migration also has been noticed even by the local communities in many areas. Temperature and water stress hot spots (places of extreme variation) that have started developing in many parts of the country in the recent decades, impact the local vegetation more significantly and specific interventions are urgently needed to counter these trends. Real threat has also emerged in the background of increased incidences of forest fires and the resultant dryness, that these forests could become subject to disease epidemic or mass dying anytime soon.

Secondly, prevalence of pure Sal crop in most forests is itself a matter of great concern manifest in several ways including **reduced soil pH, amendment in terrestrial, sub-soil and aquatic flora and fauna, nutrient cycle, water quality, etc.** affecting both production of ecosystem services and livelihoods of forest dependent communities in myriad ways. Take for example, the case of soil pH in Sal forests of different compositions. In a study in tropical Sal forests in eastern Nepal, researchers noted significantly lower pH in pure Sal forests (4.33) than in mixed Sal forests (5.26). Lower pH favours regeneration of Sal, thereby supporting a cycle of Sal forests purity and lowering of soil pH. Such reduction in soil pH causes changes in nutrient composition, soil micro-flora and fauna in more direct ways. But several other changes are more subtle and go unnoticed, yet these will have significant overall impact on the ecosystem. Reduced pH of water in streams passing through pure Sal forest, for example, leads to increased hardness of water and also cooking time of cereals and lentils in such water, and, therefore, increased domestic energy (mostly in the form of firewood) consumption. Alarming increase in human-wildlife conflict,

particularly due to migration of wild elephants out of forests and into village areas, in the recent years is also directly related to the above floristic and hydrological changes.

The two-day **meeting of PCCFs, PCCF Wild Life and CEO, CAMPA** of the eastern Indian states (West Bengal, Odisha, Jharkhand, Chhattisgarh, Uttar Pradesh and Bihar), **researchers** and **public sector coal companies** of the region on **20 and 21st September 2019 at Ranchi** will discuss the above critical issues, share experiences and device suitable temporal and spatial strategies to overcome the above-noted gravest threat that eastern Indian forests are facing today.

The meeting will also utilise this opportunity to share experiences related to another major challenge – forest boundary maintenance using modern technologies including **DGPS survey** as mandated by the Hon'ble Supreme Court. There are teething problems related to methodology and mobilizing skilled resources for DGPS survey. Each state of India is dealing with the problem in their own manner. There has been no systematic attempt so far to learn from each other's experiences at the macrolevel. Given the vastness of the problem, particularly in such states where forests occur in small patches with serrated boundaries, there is a need to develop a system that is a healthy balance of speed and accuracy. State agencies in Odisha (ORSAC, etc.) have developed in-house expertise, while Odisha Forest Department has recently augmented its capacity by partnering with a private sector expert in a scheme where each partner has defined role and responsibility. On the other hand, Jharkhand forest department has shifted back to in-house DGPS surveys after experimenting with private sector partners - a decision taken also in the view of the need for staff capacity building for the soon-to-be-adopted web-GIS based MIS for all field operations up to forest guard level.

The **CAMPA funds** are highly relevant to the above themes of the meeting. The CAMPA Act 2016 specifically mentions that the funds be used, besides artificial regeneration, for assisted natural regeneration, wildlife protection and production of environmental (including ecological) services. The meeting at Ranchi would be utilized to deliberate upon how State and national CAMPA funds could be used towards specific issues related to Sal forests of eastern region in a more coherent manner so that inter-state landscapes could be maintained for bio-diversity enrichment, wildlife protection and reduction in human-animal conflicts. The eastern Indian region has large **coal reserves** also, and several public and private sector companies are operating in the area since over a century. These companies not only hold large lands covered with forests but also have elaborate forest management and environmental management plans, including for reclamation of mined-over areas. Their role in addressing the above noted issues would be highly crucial. **Public sector coal companies** have been invited to participate in the deliberations, which will help them fine-tune their plans as per outcomes of the meeting.

A **pre-meeting workshop** is also being organized by Jharkhand Forest Department with knowledge partners including reputed research and development organizations, environment wings of major public sector undertakings and NGOs/ private sector specialists to fine-tune the issues on the above noted themes. This one-day workshop is scheduled to be held Ranchi on **18 Sept. 2019.** The outputs of this workshop will be presented to the participants of the 20-21 in form of PPT presentations in each session. Participation by organisations/ individuals from other states is highly solicited. **PCCFs of all States are requested to encourage R&D institutions, NGO experts, PSU representatives, etc from their States to attend the workshop on 18th Sept 2019 also.**

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Programme of the Meeting

20.09.2019

Inaugural Session
10.30AM: 11.30AM

Welcome	: Dr. Sanjay Kumar, PCCF & (HoFF), Jharkhand
Address	: Shri Saibal Dasgupta, Addl. Director General (FC), Govt of India
Address	: Shri Siddhanta Das, Director General of Forests & Spl. Secy, GoI
Address:	: Chief Guest

Technical Session-I
12.00 noon – 1.30 pm

Extent of the problem of reduction in occurrence of associate species in Sal forests, and conversion Sal bearing forest to pure Sal; its effect on soil, natural regeneration, disease and pest attack, animal behaviour, etc.

Session Chair	: Shri Pawan Kumar, PCCF & HoFF, U.P.
Presentation of key issues	: Dr. H.S.Gupta, PCCF (R&T), Jharkhand
Rapporteur	: Smt. Uma Nanduri, CEO, CAMPA, Odisha.

Technical Session-II
2.30 pm to 4.00 pm

Silvicultural, mechanical and policy interventions to enrich Sal forests to with associate species to regenerate Sal forests as per normal floristic composition.

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Session Chair	: Shri Sandeep Tripathi, PCCF & HoFF, Odisha
Presentation of key issues	: Shri S.N. Keolyar, PCCF-cum-ED, Jharkhand
Rapporteur	: Shri Prabhakar Dubey, CEO, CAMPA, U.P.

Technical Session-III
4.00 pm to 5.30pm

Dealing with specific spatio-temporal issues, including effect of climate change on population biology of major plant and animal species, particularly change in animal behaviour leading to conflict with human beings in hot-spot regions of temperature and rainfall variations, regeneration of forests and complexity of wild-life management in coal mine and adjoining areas, inter-state boundaries, etc.

Session Chair	: Shri Rakesh Chaturvedi, PCCF & HoFF, Chhattisgarh
Presentation of key issues	: Shri P.K. Verma, PCCF, Wildlife, Jharkhand, Ranchi.
Rapporteur	: Shri Rakesh Kumar, CEO, CAMPA, Bihar.

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21.09.2019

Technical Session-IV
10.00 am to 11.30 am

The problems and prospects of digitization of forest boundaries including DGPS surveys with speed and accuracy required to tackle general issues related to forest-land encroachment, forest land diversions and GIS-based MIS for forestry operations including legal action cycle on forest offence s.

Session Chair	: Shri Sidharth Barari, PCCF & HoFF, West Bengal
Presentation of key issues	: Shri Manoj Singh, APCCF, Working Plan, Jharkhand
Ppt. on DGPS survey methods	: Odisha Forest Dept. partner
Rapporteur	: Dr. Sanjay Srivastava, CEO, CAMPA, Jharkhand,

Concluding Session
11.30 am to 12.30 pm

Summing up and Recommendations

Session Chair	: Shri S.S. Choudhary, PCCF & HoFF, Bihar
Session Co-chair	: Shri Sunil Pandey, PCCF Wildlife, U.P.
Rapporteur	: Shri Ravi Kant Sinha, PCCF Wildlife, West Bengal

Field-trip to nearby Sal forests
12.30 pm to 5.30 pm

Note on Session Structure

Each session will begin with a 10 min. presentation on key issues by a resource person who brings along learnings from the pre-meeting workshop organized by Jharkhand Forest Department on each of the above session-issues with knowledge partners including reputed research and development organizations, environment wings of major public sector undertakings and NGOs/ private sector specialists. Such workshop has been organized at Ranchi on 18 Sept. 2019. Participation by organisations/ individuals from other states is highly solicited. PCCFs of all States are requested to encourage such participants from their States to attend the workshop

The presentation on key issues would be followed by response/ inputs from each State either through oral or PowerPoint presentation of maximum 5 minutes each, and thereafter oral response by other participants.

Each session will conclude with a summary narration of the deliberations, and the 'way-forward' by the session chair.

The report of each session, and summary recommendations of the meeting shall be forwarded to MoEF&CC, GoI for taking it forward in terms of new policy and programmatic initiatives, especially towards a national level guidance on utilisation of national and State CAMPA funds towards field implementation, monitoring and evaluation of those initiatives in due course. The respective State governments and participating Public Sector Undertakings in coal and other sectors would be able to take feasible initiatives at their level also.

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